

Application No.: 10/074,792
Amendment dated: May 12, 2003
Reply to Office Action of: January 15, 2003

MAT-6660US2

REMARKS/ARGUMENTS

By this Amendment, Applicants have amended claims 13 and 14. Claims 13-28 are pending.

Page 1 of the Office Action indicates that claims 1-13 are withdrawn from consideration and that claims 14-28 are rejected. Applicants respectfully submit that this is apparently a typographical error. Applicants cancelled claims 1-12 in a Preliminary Amendment dated February 12, 2002. Applicants note that the remainder of the Official Action correctly recognizes that claims 13-28 are pending.

Drawing Objections

The drawings are objected to as failing to comply with 37 CFR 1.84 (p)(5) because "they include the following reference sign(s) not mentioned in the description: 43, and 21'." Applicants respectfully disagree with these drawing objections.

Applicants note that original Figures 10(d), 11(b), 11(c), 12(d) and 12(e) did show a reference numeral 21' but these drawings were amended by the Preliminary Amendment dated February 12, 2002. That Preliminary Amendment eliminated the reference numeral 21'. As to the reference numeral 43, Applicants respectfully submit that this reference numeral is found in Figures 4 and 6 and that the reference numeral is in fact discussed in the specification at page 9, line 17.

Based on the foregoing remarks, Applicants respectfully traverse the drawings objections and respectfully submit that the drawings are in full compliance with 37 CFR 1.84(p)(5).

Objections To The Abstract

The Abstract is objected to for reasons set forth in numbered paragraph 4 of the Office Action. Following the guidance of the Examiner, Applicants have amended the Abstract to overcome the basis for the Examiner's objection.

Objection To The Title

The title is objected to as being "not descriptive". Following the Examiner's suggestion, in part, Applicants have amended the title to more clearly be descriptive

of the invention. Applicants submit that the amendment to the title overcomes the Examiner's objection.

Claim Rejections Under 35 U.S.C. § 102

Claims 13-16, 18, 22, 23 and 25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hayama. Based on this Amendment, Applicants respectfully traverse this Section 102(b) rejection.

Claims 13 and 14 are independent claims. Claims 15-21 are dependent on claim 13, and claims 22-28 are dependent on claim 14. Turning first to claim 13, it is directed to a multilayer ceramic substrate including the following elements:

- a ceramic substrate;
- a first conductive pattern having a **convex via having a step**, and being formed on said ceramic substrate by a transfer printing technology through an intaglio printing using a flexible resin substance;
- an insulation layer formed on the first conductive pattern; and
- a second conductive pattern electrically connected by way of said via.

Applicants submit that the multilayer ceramic substrate defined by claim 13 is patentably distinguished from the Hayama Reference at least based on the requirement that the convex via having a step. This step of the convex via is readily discerned in Figure 1 where the via is identified by numeral 11. It is Applicants' contention that a via having a step is not taught or suggested in the Hayama Reference.

In addition, the Hayama Reference does not appreciate or even consider the advantage resulting from the convex via having a step defined in Applicants claim 13. The convex via having a step has at least two advantages. First, it is easy to control width and depth of the second groove 13 corresponding to the convex via 11. This advantage is described in the specification at page 7, lines 14-23. Second, a fine wire pattern, having high wiring density results from Applicants' claimed invention because it is easy to form a convex via having a small diameter at the top. These

Application No.: 10/074,792
Amendment dated: May 12, 2003
Reply to Office Action of: January 15, 2003

MAT-6660US2

two advantages of Applicants' convex via having a step are simply not found in the Hayama Patent.

The Hayama Reference in general relates to electronic parts manufactured by intaglio printing. The Office Action focuses on the Hayama Reference relative to the intaglio printing process of Figure 8, and the hybrid IC substrates shown in Figures 10-13. More specifically, the Hayama Reference discloses an electrode 35 in Figures 11 and 12. But this electrode 35 has a circular truncated cone shape, and therefore does not have the "step" as required of the convex via defined in Applicants' claim 13.

Independent claim 14 also includes the requirement that the convex via have a step. Thus, all pending claims 13-28 include the feature of the convex via having a step. On the basis of this feature, Applicants submit that claims 13-28 are patentably distinguished over the Hayama Reference and request that the Section 102(b) rejection be withdrawn.

Claim Rejections Under 35 U.S.C. § 103

Claims 17, 19-21, 24, and 26-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayama in view of Saitou. Based on this Amendment, Applicants respectfully traverse this Section 103(a) rejection.

As noted above, claims 17 and 19-21 are dependent on claim 13. In addition, claims 24 and 26-28 are dependent on claim 14. For the reasons stated above, Applicants submit that these dependent claims are patentably distinguished from the Hayama Reference. It is Applicants' further contention that the deficiency heretofore discussed with respect to the Hayama Patent is not rectified by the Saitou Patent. That is to say, the Saitou Patent lacks any teaching or suggestion of a convex via having a step as defined in all pending claims.

The Saitou Patent concerns in general a thick and thin film hybrid, multilayer wiring substrate which includes an adjustment layer provided between a thick film circuit and a thin film circuit to adjust positions of the thick film circuit and a thin film circuit. More particularly, the Saitou Patent discloses an alumina substrate 11 with via portions 13. But nowhere in the Saitou Patent is there any teaching or suggestion of a convex via having a step as defined in all of Applicants' pending claims. The

Application No.: 10/074,792
Amendment dated: May 12, 2003
Reply to Office Action of: January 15, 2003

MAT-6660US2

Saitou Patent does not anticipate or render obvious Applicants' claimed invention. Applicants therefor request that the Section 103(a) rejection based on the Hayama and Saitou Patents be withdrawn.

Based on the foregoing remarks and amendments, Applicants respectfully submit that claims 13-28 are in condition for allowance. Reconsideration and allowance of all pending claims are respectfully requested.

Respectfully submitted,

RatnerPrestia



Lawrence E. Ashery, Reg. No. 34,515
Daniel N. Calder, Reg. No. 27,424
Attorneys for Applicants

DNC/fp

Enclosure: Abstract

Dated: May 12, 2003
P.O. Box 980
Valley Forge, PA 19482-0980
(610) 407-0700

The Commissioner for Patents is hereby authorized to charge payment to Deposit Account No. **18-0350** of any fees associated with this communication.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450 on:

May 12, 2003



Application No.: 10/074,792
Amendment dated: May 12, 2003
Reply to Office Action of: January 15, 2003

MAT-6660US2

ABSTRACT

A multilayer ceramic substrate has a first conductive pattern that is transfer-printed on a ceramic substrate using an intaglio plate made of a flexible resin. The intaglio plate has a plurality of grooves with different depths. A first insulation layer is on the first conductive pattern, and a second conductive pattern is on the insulating layer. The two conductive patterns are coupled by a via.